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ABSTRACT

The middle childhood years are a period of refinement of the semantics and syntax acquired in the early years, of substantial metalinguistic development, and of subtle changes in actual processing strategies. In a study undertaken to determine how these three factors interact, children aged 6 to 11 were asked to produce and recognize paraphrases. Results showed: (1) syntagmatic processing of sentences declined with age, while paradigmatic, paraphrastic processing increased; (2) the effect of imaginal similarity upon semantic processing also declined, but was present at all ages; (3) lexical factors were more salient than syntactic factors and developmentally affected processing strategies; younger children focused upon individual words and made lexical substitutions while older children focused upon the entire set of content words in a sentence and made syntactic rearrangements; and (4) psycholinguistic demands affected information loss. Taken together, these findings integrate and extend previous developmental studies and studies of metalinguistics, and illustrate the Piagetian concept of decalage and the Brunerian concept of iconicity. (Author/AMH)

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SOME ASPECTS OF LANGUAGE DEVELOPMENT IN MIDDLE CHILDHOOD

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SOME ASPECTS OF LANGUAGE DEVELOPMENT IN MIDDLE CHILDHOOD

The study of language development has focused largely upon early childhood, for this is the time of rapid, impressive linguistic growth. In some ways this focus has been too narrow; many scholars have considered language development to be largely completed, except for vocabulary additions, by the time a child enters elementary school. We have come to realize, however, that language development (and not just vocabulary growth) continues throughout the middle childhood years, and perhaps beyond. Language development in middle childhood--in the elementary school years--is less spectacular than language development in early childhood, but is a vital step on the path to adult competency.

These middle years see the refinement of semantic and syntactic knowledge, changes in processing strategies, and the development of metalinguistic ability. Carol Chomsky's frequently cited study The Acquisition of Syntax in Children Aged 5 to 10 illustrates the refinement of semantic and syntactic skills originating in the earlier years. The much studied syntagmatic-paradigmatic shift in word association illustrates changes in processing strategies. And Schultz and Pilon's (1973) and Kessel's (1970) studies of linguistic ambiguity explore the development of this metalinguistic ability. However, a very important metalinguistic skill, paraphrase, has received, as yet, very little study in a development framework.

Paraphrase is an important part of language acquisition and of communication. It is vital for vocabulary growth, especially for the acquisition of terms such as unlikely that have no concrete

referents. It is vital for acquiring a variety of syntactic structures, for example, a complex sentence containing a relative clause The man who met Darth Vader is visiting my aunt can serve the same function as two simple sentences: The man met Darth Vader. The man (He) is visiting my aunt. Paraphrase is used to clarify those elements in a conversation which have not been comprehended (especially if repetition of the elements has failed):

A: Put some butter on it.
B: Huh?
A: Put some butter on it.
B: What?
A: Spread some butter on my corn muffin.

The few developmental studies involving (though not necessarily focusing upon) paraphrase show that young children do not have a consistent concept of preservation of meaning with change in form. For example, Gleitman, Gleitman, and Shipley (1972) found that when preschoolers corrected ungrammatical utterences, 85% of their corrections did NOT preserve meaning: get in the box was offerred as a correction for box the open. My own studies of paraphrase in pre-schoolers also indicate that before the middle years, children do not have a firm grasp of paraphrase. Pre-school children produce paraphrases in their spontaneous speech, perhaps intuitively, but they usually cannot produce them upon request.

The study I am discussing today focuses upon language development in the middle childhood years and utilizes paraphrase tasks as examination tools. Paraphrase is a good medium

for such an investigation because it provides insight into metalinguistic development and into processing strategies. Moreover, the production and comprehension of paraphrase occurs more frequently in normal discourse than do other metalinguistic activities, such as the detection and disambiguation of ambiguity.

In this study 36 children aged 6 to 11 were asked to produce paraphrases for 18 sentences and to recognize paraphrases for each of these 18 sentences. In the recognition task, there was a set of three possible paraphrases for each of the 18 orignal, focal sentences. In each of these sets of three possible paraphrases, there were: a lexical paraphrase, a syntactic paraphrase, and a pseudoparaphrase. The pseudoparaphrases consisted of either an imaginally similar sentence, a sentence that was either a logical presupposition or consequence of the focal sentence, a sentence that was antonymous of syntactic rearrangement, or a sentence which preserved some of the words of the focal sentence, but which bore no semantic relationship to the sentence. (Part A of the handout shows examples of focal sentences and sets of possible paraphrases.)

In all presentations, the production task preceded the recognition task so that paraphrase production by the children would not be influenced by the suggested paraphrases of the recognition task. Both tasks were presented without pictures or other contextual support so that the children would have to rely solely on their linguistic and metalinguistic abilities.

The children's responses to the production task were scored as correct paraphrases if they included either lexical substitution, syntactic rearrangement, or both, and if the major

semantic units were preserved. (Part B of the handout shows examples of correct and incorrect sentences elicited in the production task.) The children's responses to the recognition task were scored correct for lexical and syntactic paraphrases and incorrect for pseudoparaphrases. Analyses of Variance yielded significances at the .01 and .001 levels.

The ability to produce and recognize paraphrases increased with age. This was due to three factors:

1. Older children not only made more accurate lexical substitutions and syntactic rearrangements than younger children did, but they lost fewer bits of information when performing these operations.

2. Older children were less likely to be influenced by imaginal similarity then younger children were.

3. Older children showed less evidence of syntagmatic processing, and more evidence of paradigmatic processing than younger children did.

In addition to the overall increase in paraphrase proficiency, there was also a stylistic difference: the youngest children in the study, the 6 and 7 year olds, used lexical substitution as a strategy for paraphrase production more often than they used syntactic rearrangement; children 8 and 9 and older used syntactic rearrangement more frequently.

This study integrates and extends previous studies of language development in the middle childhood years. In addition to illustrating general linguistic growth, it furnishes specific information about the increase in metalinguistic capability and about changes in linguistic processing.

Metalinguistic Capability: Earlier studies of metalinguistic development suggest that semantic, or lexical, processing precedes syntactic processing. Schultz and Pilon (1973) and Kessel (1970) observed that children could detect and disambiguate lexical ambiguities such as The man is holding the pipe or Nobody liked the plant before they could detect and disambiguate syntactic ambiguities such as They saw a man eating fish or The shooting of the hunters was bad. DeVilliers and deVilliers (1974) and Gleitman, Gleitman, and Shipley (1972) observed that children could detect and correct irregularities resulting from semantic factors such as Drink the chair before they could detect and correct syntactic irregularities such as Cake the eat. Likewise, in this study of paraphrase, children could successfully produce paraphrases by lexical substitution before they could successfully produce paraphrases by syntactic rearrangement. This switch from lexical to syntactic processing would therefore seem to be characteristic of metalinguistic capability in general, and results from a general increase in linguistic skill.

The precedence of lexical facors in this study and in the developmental studies of ambiguity is due to the relative simplicity of lexical processing. In both ambiguity and paraphrase, lexical processing involves operation upon one (or a very few) elements in a set or frame of elements. An isolated element is changed, but the frame itself is not acted upon. In syntactic rearrangement, however, the set of elements, the frame itself, undergoes change. The precedence of semantic or lexical factors in the Gleitman, Gleitman, Shipley study of ungrammaticality is due to the greater salience of semantics. Normally, the meaning of a sentence is its most important aspect.

Given the relative simplicity of lexical substitution vis-a-vis syntactic rearrangement, and given the greater salience, we might ask why children shift from lexical substitution to syntactic rearrangement as the preferred method of performing metalinguistic tasks.An examination of Honeck's (1973) study of paraphrase preference in adults provides some insight into this shift. Honeck found that adults prefer paraphrases in which the content words are unchanged but rearranged, to paraphrases in whichword order is unchanged but in which the content words have been replaced with synonyms. Thus, the preferred paraphrase for The struggle evoked the feelings that changed the lad would be The feelings that changed the lad were evoked by the struggle rather than The fight produced the emotions that altered the boy. Honeck attributed this to the greater saliency of the lexical or semantic structure, rather than the syntactic structure, of the sentences. He suggested that adults put more importance upon the ideas or words of a sentence than upon the order in which the ideas or words occur. Thus, adults are drawn to the lexical or semantic elements of a sentence, and use syntactic means to preserve these elements.

The same factors operated in this paraphrase study. By ages 8 and 9 children would attempt to preserve the content words in a sentence more often than they would attempt to preserve the order in which the words occurred. That younger children did not attempt to do this as frequently is due to their lesser amount of linguistic experience. Instead of operating upon a set of elements, the sentence frame itself, they operated upon a single element, a word. The relative ease of operating

upon a single element in a set rather than upon the entire set was reflected in the performance of one of the younger children in this study and by the performance of pre-schoolers in a similar study (Hoar 1978). These children would respond to at least some of the focal sentences in the production task by providing a one or two word response (synonyms or would-be synonyms) for one of the words or phrases of the sentence. For example, the sentence Last night the tiny puppy was crying evoked the response small, followed by small puppy. After being prodded, the child produced the sentence Last night the small puppy was crying. It is during the years of middle childhood that children acquire the linguistic experience that enables them to use syntactic means to preserve semantic or lexical identity.

Processing Changes: In addition to this change, two other changes in linguistic processing were observed: one was the movement away from syntagmatic processing toward paradigmatic processing, and the other was the decline in the influence of imaginal similarity. The first of these, the change from predominantly syntagmatic to paradigmatic processing is reminiscent of the syntagmatic-paradigmatic shift in word association and picture grouping tasks. However, in those studies the task centered upon single words; here the task involved entire sentences. Also, in those studies syntagmatic responses were those which were of a different form class than the stimulus word, while paradigmatic responses were those of the same form class. This classification is too rigid, given the nature of English, for a given word can actually belong to several form classes. For example shoe can function as a noun I found a shoe,

a verb, Let's shoe Old Dobbin, or an adjective Put it in the shoe box. Emerson and Gekoski (1976) contend that the syntagmatic-paradigmatic distinction should be further refined by the classification: interactive (that is, narrative or sequential) vs. categorical. Thus, if the stimulus word shoe elicited box, the response would be classified as syntagmatic rather than paradigmatic. If we apply Emerson and Gekoski's classification to responses involving sentences rather than words, we would consider interactive responses to be those sentences which could logically precede or follow the focal sentences, that is, presuppositions or consequences (see handout). And we would consider paradigmatic responses to be those sentences of the same semantic class or category, sentences which could fill the same slot in discourse as the focal sentences, e.g. paraphrases.

Earlier studies of the syntagmatic-paradigmatic shift in processing single words show that the shift occurs at approximatly the same time that children rely upon syntax rather than semantics alone for linguistic processing. In this study of paraphrase, the decrease in the number of syntagmatically based errors made by children was accompanied by the increase in their syntactic attempts at paraphrase. Thus, it is during the years of middle childhood that linguistic processing at the level of the sentence becomes syntactic rather than semantic.

The second major processing change observed in this study, the decline in the influence of imaginal similarity, was observed in both paraphrase production and paraphrase recognition. The younger children were more likely to produce faulty paraphrases resulting from imaginal similarity, such as Bill gave some small

cars to Joan as a paraphrase for Bill sold some small cars to Joan. These younger children were also more likely to be misled by imaginal similarity in recognizing paraphrases. However, it was not the case that they did not understand the conceptual distinctions involved (e.g. gave and sold). When questioned about these distinctions, they could usually differentiate them correctly. But under the demands of performing the paraphrase tasks, they would not take these distinctions into account.

Kosslyn and Bower (1974) observed similar processing errors in five year olds in a sentence recall task. The five year olds were more likely to be influenced by imaginal similarity than adults were, and they would recall a sentence such as The fly flew over the blanket that was over the dog as a sentence that had actually been presented to them, when the sentence that had been presented was The fly flew over the dog that was under the blanket. As was the case in the paraphrase study reported here, the children in Kosslyn and Bower's study were aware of conceptual distinctions, but tended to forget them under the demands of the tasks being performed. Kosslyn and Bower contend that children tend to forget conceptual, relatively non-sensory distinctions because they are acquired fairly late and are often difficult to comprehend.

I think this is a partial explanation for the decline in the influence in imaginal similarity in middle childhood, and I think another reason for this decline is the decline in the salience of iconicity as described by Bruner. Iconicity is well illustrated by a modification Bruner made upon the classic Piagetian conservation task involving the transfer of equal

amounts of liquid to different sized beakers. In the classic Piagetian task young children will acknowledge that equal amounts of liquid are indeed equal when contained in beakers of equal size, but after they have seen the liquid poured into a short, wide container and a tall thin container, they will insist that there is now more liquid in the tall beaker. The Piagetian explanation is that they are not able to reason that the amount of liquid remains the same because they are not able to mentally reverse the processes involved. Bruner asserted that the cause was not the children's inabilty to reason or perform mental reversals, and contended that it was instead the visual image of the different sized beakers, that is the iconicity of the stimuli, that led the children astray. Bruner demonstrated this by performing the task with the beakers blocked from the children's view by a screen. As long as they couldn't see the unequal beakers, the children were able to reason that liquid poured from equal sized beakers would remain the same when poured into other containers. It was only when the children could see the unequal beakers that they said that the equal amounts of liquid were no longer equal. Thus, their ability to reason and perform mental acts was eclipsed by iconicity or visual salience.

This is echoed by the children in this study of paraphrase and in Kosslyn and Kosslyn and Bower's study who could make conceptual distinctions but who were swayed by the similarity of the images evoked by the sentences in the tasks. It is during the years of middle childhood that children become able to retain non-sensory distinctions longer and therefore become less influenced by visual influences.

Finally, during these middle years children also become less dependent upon context for linguistic processing. This is a corollary of increased metalinguistic capability and of increase syntactic and semantic proficiency. This decreased dependence upon contextual support furnishes an explanation for what might seem to be a discrepancy in linguistic performance, namely the fact that pre-schoolers produce paraphrases, grammatical corrections, and other linguistic phenomena such as metaphors in their spontaneous speech. Yet, they seem to lack this production capability when asked to produce these forms in an experimental setting, a setting which is usually very low in contextual support. What we are actually observing is not a discrepancy, but an example of Piagetian décalage. These seemingly similar forms are produced by dissimilar operations. Production based upon contextual clues is not the same operation as production without such clues, and production without contextual support is not dependable until the middle childhood years.

To summarize, the middle childhood years are characterized by increased syntactic and semantic proficiency, by greater metalinguistic capability, and by changes in processing strategies which reflect the older child's freedom from non-linguistic influences. It is during these years that linguistic skills become rationally based and adult-like performance is approached though probably not yet accomplished.

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SOME ASPECTS OF LANGUAGE DEVELOPMENT
IN MIDDLE CHILDHOOD

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PART A - Focal Sentences and Sets of Proposed Paraphrases

1. Bill sold Joan a fat goldfish.
   a. Bill sold Joan a chubby goldfish. (Lexical Paraphrase)
   b. Bill sold a fat goldfish to Joan. (Syntactic Paraphrase)
   c. Bill gave Joan a fat goldfish. (Imaginally Similar)

2. The fireman cooked the thin carrots.
   a. The fireman cooked the skinny carrots. (Lexical Paraphrase)
   b. The thin carrots were cooked by the fireman. (Syntactic Paraphrase)
   c. The fireman ate the thin carrots. (Logical Consequence)

3. Joan took Bill a thin valentine.
   a. Joan took Bill a skinny valentine. (Lexical Paraphrase)
   b. Joan took a thin valentine to Bill. (Syntactic Paraphrase)
   c. Bill took Joan a thin valentine. (Antonymous)

4. The small baby stood up this morning.
   a. The little baby stood up this morning. (Lexical Paraphrase)
   b. This morning the small baby stood up. (Syntactic Paraphrase)
   c. The small baby threw up this morning. (Non-paraphrase)

PART B - Response Types to Paraphrase Production Task

1. (Focal Sentence) This afternoon the dirty car got washed.
   (Lexical Paraphrase Response) This afternoon the dirty car got cleaned.

2. (Focal Sentence) The fat lady was dancing last night.
   (Syntactic Paraphrase Response) The lady that was fat was dancing last night.

3. (Focal Sentence) The large apple was eaten by the rabbit.
   (Combination Paraphrase Response) The rabbit ate the big apple.

4. (Focal Sentence) Bill sold Joan a fat goldfish.
   (Information Loss Response) A fat goldfish was sold to Joan. (Lost Agent).

5. (Focal Sentence) The thin girl fell down last week.
   (Added Information Response) Last week the thin girl tripped on a rock and fell down.

6. (Focal Sentence) The large apple was eaten by the rabbit.
   (Non-paraphrastic Lexical Response) The large apple was taken by the rabbit.

7. (Focal Sentence) The elephant bumped the tiny tree.
   (Non-paraphrastic Syntactic Response) The tiny tree bumped the elephant. (Agent-Object Reversal).

8. (Focal Sentence) The mailman pushed the dirty cart.
   (Repetition Response) The mailman pushed the dirty cart.